

DOES CULTURE MODERATE THE RELATIONSHIP BETWEEN AWARENESS  
AND INTERNALIZATION OF WESTERN IDEALS AND THE DEVELOPMENT OF  
BODY DISSATISFACTION IN WOMEN?

A Thesis

by

CORTNEY SODERLIND WARREN

Submitted to the Office of Graduate Studies of  
Texas A&M University  
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

December 2003

Major Subject: Psychology

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## ABSTRACT

Does Culture Moderate the Relationship Between Awareness and Internalization of  
Western Ideals and the Development of Body Dissatisfaction in Women?

(December 2003)

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Chair of Advisory Committee: Dr. David H. Gleaves

The sociocultural model of eating disorders suggests that awareness of a thin physical ideal directly affects internalization of that ideal, which in turn, directly affects body dissatisfaction. The current study evaluated the general accuracy of the sociocultural model and examined the potential for ethnicity to protect against eating disorder symptomatology by moderating the relationships between awareness and internalization and between internalization and body dissatisfaction. Spanish ( $n = 100$ ), Mexican American ( $n = 100$ ), and Euro-American ( $n = 100$ ) female participants completed various questionnaires measuring sociocultural attitudes towards appearance and body dissatisfaction. Analysis of covariance with tests of homogeneity of slope and path analysis using maximum likelihood with robust standard errors tested the two relationships by ethnic group. Results supported the sociocultural model: there was strong evidence for the mediational effect of internalization on the relationship between awareness and body dissatisfaction. Furthermore, ethnicity moderated the relationships such that both relationships were significantly stronger for Euro-American women than for Mexican American or Spanish women. Within the Mexican American group level of

acculturation also moderated these relationships. Taken together, the results of this study highlight how ethnicity can protect against the development of eating disorder symptoms. Denouncing the thin ideal, minimizing appearance as an indicator of female value, and emphasizing personal traits other than appearance as determinants of worth are important in protecting against the development of body dissatisfaction and more severe eating pathology.

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## TABLE OF CONTENTS

	Page
ABSTRACT.....	iii
ACKNOWLEDGEMENTS.....	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES.....	vii
LIST OF FIGURES.....	viii
INTRODUCTION.....	1
Western Culture and Eating Disorder Symptomatology.....	2
Sociocultural Model: Awareness, Internalization, and Body Dissatisfaction.....	3
Protective Factors: Non-Western Culture and Ethnicity.....	4
Mexican Americans and Eating Disorder Symptomatology.....	6
Spain and Eating Disorder Symptomatology.....	9
Study Objectives and Hypotheses.....	10
METHOD.....	12
Participants.....	12
Measures.....	12
RESULTS.....	17
Descriptive Information by Group.....	17
Moderator Effects.....	18
Path Analysis.....	19
Acculturation.....	23
CONCLUSION AND DISCUSSION.....	25
REFERENCES.....	31
APPENDIX.....	43
VITA.....	54

## LIST OF TABLES

TABLE		Page
1	Descriptive Information for Three Samples.....	43
2	Analysis of Covariance Results Predicting Internalization and Body Dissatisfaction.....	44
3	Regression Weights (and 95% Confidence Intervals) as a Function of Ethnic Grouping.....	45
4	Path Analysis Results.....	46
5	Unconstrained Path Model (Model 1): Regression Weights and 95% Confidence Intervals as a Function of Ethnic Group.....	47
6	Regression Weights and 95% Confidence Intervals as a Function of Acculturation Group.....	48
7	Awareness, Internalization and Body Dissatisfaction Scores by Level of Acculturation.....	49

## LIST OF FIGURES

FIGURE		Page
1	Sociocultural Model.....	50
2	Effect of Moderating Variable on Sociocultural Model.....	51
3	Hypothesized Effect of Ethnicity Moderating the Relationship Between Awareness and Internalization.....	52
4	Standardized Path Coefficients in Unconstrained Model by Group.....	53



## INTRODUCTION

Eating disorders are among the most common yet serious psychological problems facing females in the United States today. Lifetime prevalence rates of the two main disorders, anorexia nervosa (AN) and bulimia nervosa (BN), are estimated to be .5% and 1.0-3.0% respectively, with over 90% of cases occurring in women (Gross & Rosen, 1988; Heatherton et al., 1995). Furthermore, eating disorders are associated with some of the highest rates of hospitalization and suicide attempts of any psychological disorder (Newman et al., 1996): An 11-year longitudinal study investigating mortality rates of eating disordered women found that women with AN were over 9 times more likely to die, with a 58 times greater suicide rate than healthy females (Herzog et al., 2000).

One of the most well-established, empirically supported risk factors for the development of eating disorders is body dissatisfaction. Body dissatisfaction, defined as a negative subjective evaluation of one's physical appearance, has been found to predict dieting, binge eating, purging, excessive laxative use, and cessation of all eating (e.g., Attie & Brooks-Gunn, 1989; Cash, 1996; Cattarin & Thompson, 1994; French et al., 1997; Joiner & Kashubeck, 1996; Stice, 2001; Stice, Mazotti, Krebs & Martin, 1998). Body dissatisfaction is prevalent in both eating disordered and non-clinical females to the degree that a moderate amount of body dissatisfaction is considered normative among women (Rodin, Silberstein, & Striegel-Moore, 1984; Thompson, Heinberg, Altabe, Tantleff-Dunn, 1999).

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This thesis follows the style and format of the *Journal of Abnormal Psychology*.

### *Western Culture and Eating Disorder Symptomatology*

Given the severity and prevalence of eating disorders and body dissatisfaction, researchers have attempted to identify factors that influence their development. Sociocultural theorists contend that Western cultural values occupy a principal role in the etiology of eating disorders and their concomitants (Heinberg, 1996; Rodin et al., 1984; Striegel-Moore, Silberstein, & Rodin, 1986). *Culture* is a broad term describing “the belief systems and value orientations that influence customs, norms, practices, and social institutions, including psychological processes (language, caretaking practices, media, educational systems) and organizations (media, educational systems)” (American Psychological Association [APA], 2003, p. 380). Dimensions of culture include shared beliefs, values, family structure, social structures, communication styles, and traditions (Katz, 1985). Embedded in the definition is the acknowledgement that all individuals are cultural beings. Culture is not a distant general context under which individual development occurs but rather, is “translated into proximal influences that directly influence development and behavior” (Smolak & Striegel-Moore, 2001, p. 112).

*Western culture*, also referred to as *Euro-American* or *White culture*, broadly refers to first-world, economically stable cultures, such as the majority culture in the United States, that value individualism, competition, rational thinking and decision making, economic displays of status and power, and a patriarchal family structure (Katz, 1985). Additionally, Western culture values and idealizes a thin female physique. Obesity is condemned on psychological, social, and economic grounds while, at the same time, images of women in the media have become thinner and the number of

articles and advertisements promoting weight loss products has increased substantially over the last several decades (for a review see Stice, 1994). Western culture stipulates that, for women, a thin body is ideal, appearance is central to one's value and role in society, and that thinness assures security, intimacy, success, and life satisfaction (Heinberg, 1996; Rodin et al., 1984; Thompson et al., 1999).

Western cultural ideals predispose women to become preoccupied with thinness and to be dissatisfied with their bodies because few (if any) attain the extremely thin but highly valued cultural ideal. Experimental research has supported this assertion: A recent meta-analysis of 25 experimental studies that examined the influence of presentation of thin-ideal media images on body satisfaction found that female participants were significantly more dissatisfied with their bodies after viewing thin media images than after viewing images of average sized models, plus sized models, or inanimate objects (Groesz, Levine, & Murnen, 2002).

*Sociocultural Model: Awareness, Internalization, and Body Dissatisfaction*

One way to assess the influence of Western cultural values on the development of eating pathology is to measure the extent to which an individual is first, aware of Western social norms and a physical thin ideal and, second, internalizes these standards (Cusumano & Thompson, 1997; Thompson et al., 1999; Thompson & Stice, 2001).

According one aspect of the sociocultural model proposed by Stice (1994), awareness of cultural pressure to be thin leads women to internalize this ideal. However, because the thin-ideal is unattainable for most women, internalization, in turn, directly leads to body dissatisfaction (see Figure 1). Recent research supports this model: A covariance

structural model assessing the direct and indirect influences of body mass, perceived pressure towards thinness, and internalization of a thin ideal on body dissatisfaction indicated that perceived pressure to be thin significantly predicted internalization of the thin ideal, which in turn predicted body dissatisfaction (Stice, Shaw, & Nemeroff, 1998). In a 2-year longitudinal study, Gardner, Stark, Friedman, & Jackson (2000) found idealization of the thin ideal predicted eating disorder symptoms in a sample of 216 children ages 6-14. Additionally, a meta-analysis of prospective and experimental studies examining risk and maintenance factors for eating pathology found that perceived pressure to be thin predicted dieting, negative affect, body dissatisfaction, onset of binge eating, and bulimic symptoms (Stice, 2002).

Sociocultural theory does not contend that eating disorders are caused solely by Western culture. It has been noted that only a small percentage of women in Western contexts develop eating disorders (Kuba & Harris, 2001). Furthermore, other contextual variables, such as socioeconomic status, peer socialization, family structure, and self-esteem, affect the development of eating disorders (Kuba & Harris). However, exposure to a Western culture, which promotes a thin ideal of beauty, does appear to increase the chance of developing eating disorder symptomatology (Polivy & Herman, 2002).

*Protective Factors: Non-Western Culture and Ethnicity*

If internalization of a thin ideal and perceived pressure to be thin are pivotal in the development of eating disorders, as the sociocultural model suggests, one goal is to identify variables that moderate the relationships between awareness and internalization and between internalization and body dissatisfaction (see Figure 2) (Crago, Shisslak, &

Ruble, 2001; Thompson et al., 1999). Factors initially hypothesized as providing protective influences against the development of eating disorder symptoms, including a strong feminist ideology, sports participation, high self-esteem, self-deceptive enhancement, and assertiveness have produced mixed results (e.g., Cororve & Gleaves, 2001; Twamley & Davis, 1999).

To appropriately clarify and evaluate sociocultural influences on eating disorders, researchers must determine whether diverse ethnic groups whose culture's of origin traditionally employ a non-thin standard of beauty have different prevalence rates, etiologies, and manifestations of unhealthy eating symptomatology (Altabe, 1996; Joiner & Kashubeck, 1996). *Ethnicity* is defined as the acceptance of the norms, mores, and practices of one's culture of origin and the concomitant sense of belonging to that cultural group (APA, 2003). Individuals are typically categorized into ethnic groups based on race, which is the socially constructed characterization of individuals typically based on visible traits (e.g., skin color, facial features, hair color and texture, stature), and culture of origin (Phinney, 1996; Katz, 1985). An *ethnic minority* is an individual of non-Western descent living in a Western cultural context (e.g., the United States) who belongs to a non-dominant cultural group (Phinney, 1996).

If the sociocultural model is accurate in its depiction of the development of eating disorders, one could conjecture that ethnicity may itself be protective against eating disorder symptomatology in at least two ways. First, a non-Western culture of origin with a non-thin ideal of beauty may provide individuals with larger, more realistic and attainable physical ideals. Second, a non-Western culture of origin may place less

value on physical appearance as a defining feature of a woman's worth. Differences in eating disorder symptomatology across ethnic groups could both substantiate the role of a thin ideal in the development of eating disorders as well as highlight the possibility for a non-thinness valuing culture of origin (i.e., non-Western) to be protective against eating disorder symptomatology.

### *Mexican Americans and Eating Disorder Symptomatology*

To understand the psychological implications of a given ethnicity, it is essential to describe specific core cultural characteristics associated with a particular ethnic group that may account for observed cross-cultural differences (Phinney, 1996). In contrast to mainstream Western culture, Mexican culture is one non-Western culture that traditionally idealizes a larger, curvy physique (Chamorro & Flores-Ortiz, 2000). Furthermore, Mexican culture values maintaining close family relationships that stress interdependence (familismo), caring for the family above all else, loyalty, communality, deterministic thinking (fatalismo), and building close interpersonal relationships (personalismo) (Santiago-Rivera, Arredondo, Gallardo-Cooper, 2002). Mexican American (or *chicano*) culture is a combination of both the Mexican culture of origin and Western (American) culture. Mexican Americans may be protected against internalization and body dissatisfaction in that they will have knowledge of the Western thin ideal (since part of their culture is indeed Western) but not internalize the ideal in the same way as other ethnic groups because of an affiliation the Mexican culture of origin that does not idealize a thin physique and that places more value on dimensions of culture other than appearance (e.g., family relationships).

Data on eating disorders and their concomitants in Mexican Americans are particularly sparse: In a recent meta-analysis of 35 studies examining the role of ethnicity and culture in the development of eating disturbances and body dissatisfaction, of the 17,781 participants utilized in the analyses, only 138 were Hispanic (Wildes, Emery, Simons, 2001). Given the dearth of data, no analyses compared the Hispanic group to other groups. The lack of research is particularly problematic because the Hispanic population is the most rapidly growing ethnic minority group in the United States (Valdez, 2000), with individuals of Mexican descent (an estimated 20 million) comprising the largest subgroup (Ramirez & de la Cruz, 2003; Santiago-Rivera et al., 2002).

One problem in the research that has utilized Mexican American participants is that investigators tend to group Mexican Americans into a Hispanic group, which is subsequently compared to other racial or ethnic groups (e.g., Altabe, 1998; Crago, Shisslak, & Estes, 1996; Fitzgibbon et al., 1998; French et al., 1997; Miller et al., 2000). Although this information is important, useful, and much less problematic than grouping all ethnic minorities into one “non-Caucasian” category and comparing it to another groups (e.g., le Grange, Telch & Agras, 1997), the Hispanic population is very heterogeneous. Technically, the Hispanic population is comprised of any person in the United States of Mexican, Puerto Rican, Cuban, Central American, South American, or other Spanish culture of origin (Santiago-Rivera et al., 2002). Data on eating disorders in a Hispanic sample may differ significantly from data focusing on Mexican Americans because of substantial variability in cultures of origin. A second problem with current

research is that few researchers examine the influence of ethnicity on the relationships theorized to lead to the development of eating symptomatology. It is not only important to understand differences in rates of eating disorder symptoms across ethnic groups but also to examine the ways ethnicity interacts with other variables to protect or put an individual at greater risk to develop eating issues (APA, 2003).

In the little research that has utilized Mexican American participants, body mass and endorsement of a thin ideal were positively related to BN symptomatology, accounting for 38% of its variance (Lester & Petrie, 1995). Kuba and Harris (2001) found that family rigidity contributed to an increased susceptibility for bulimic symptoms and poor peer socialization and family rigidity were related to preoccupation with thinness.

One factor that may influence the development of eating disorders within the Mexican American (and other ethnic minority groups) is acculturation to Western culture. *Acculturation* is the basic process or extent to which a newcomer learns and adopts traits, behaviors, beliefs, values or attitudes of the dominant culture (Kempa & Thomas, 2000). If awareness of a thin ideal leads to internalization of that ideal, one could argue that the more acculturated an individual is to Western culture, the more likely she is to have internalized the dominant messages pertaining to beauty, thereby putting her at a higher risk for the development of an eating disorder (Miller & Pumariega, 2001; Pumariega, 1986). However, data examining the influence of acculturation and eating disorders have proved equivocal: Some researchers have reported a positive relationship between heightened level of acculturation and disordered



eating symptomatology (Cachelin, Veisel, Barzegarnazari, & Striegel-Moore, 2000; Chamorro & Flores-Ortiz, 2000), while others have found no significant relationship (Joiner & Kashubeck, 1996; Kuba & Harris, 2001; Lester & Petrie, 1995).

### *Spain and Eating Disorder Symptomatology*

There is a significant historical and cultural link between Spanish, Mexican, and Mexican American culture (for a review see Pontón & León-Carrión). Mexican culture is comprised of the merging of various indigenous Mexican cultures (e.g., Aztec, Mayan, Incan) and Spanish culture (Schaefer, 1990). Mexican American culture, then, is a fusion of Spanish, indigenous Mexican, and Euro-American culture.

Due to the cultural link between Spain and Mexico, it is important to compare Mexican Americans not only to the dominant ethnic group in the United States, but also to the dominant ethnic group in Spain. Spanish culture is characterized by patriarchal family structures, collectivist values, distinct gender roles, male dominance and superiority (*machismo*) and female subordination (*marianismo*), social order, and tradition (de Azaola, 1990; Gouveia, de Albuquerque, Clemente, & Espinosa, 2002).

There is limited information about the prevalence of eating disorder symptomatology in Spain. A study of 1,300 adolescents in Spain reported that 4.7% of girls had an eating disorder (Morande, Celada, & Casas, 1999). Social standards of female appearance and pressure to meet a thin ideal are thought to be increasing (Gleaves et al., 2000).

Comparisons of eating disorder symptomatology in Spain to Euro-American, Mexican, and Mexican American individuals are sparse. In a study comparing body

image preferences in American and Spanish college students, current and ideal body sizes and body dissatisfaction were similar across groups, although in normal weight individuals (BMI = 20-25) there was a tendency for (primarily Caucasian) Americans to be more dissatisfied with their body size (Gleaves, et al., 2000). Raich et al. (2001) found eating disorder symptoms and body dissatisfaction to be more prevalent and severe in Spanish than in Mexican college students (Raich, et al., 2001). In a study comparing adolescents in the United States and Spain there was a greater interest in weight loss and eating disorder symptoms in American girls than Spanish girls (Raich et al., 1992).

#### *Study Objectives and Hypotheses*

The current study explored the potential for ethnicity to protect against internalization of a thin-physical ideal and body dissatisfaction. The main goal of this study was to examine two intertwined issues: First, to evaluate the sociocultural model by testing the prediction that awareness of a thin ideal directly affects internalization of that ideal, which subsequently directly affects body dissatisfaction and; Second, to investigate the potential for ethnicity to moderate these relationships (as shown in Figure 2).

To explore these issues, female participants were recruited from three ethnic groups: Spanish ( $n = 100$ ), Mexican American ( $n = 100$ ), and Euro-American ( $n = 100$ ). Ethnic groups were defined by participants' race and culture of origin. Euro-American participants represented the ethnic majority group in the United States (i.e., racial majority (Caucasian) with a Western culture of origin). Mexican American participants

represented an ethnic minority group in the United States (i.e., racial minority with a non-Western culture of origin that historically employs a non-thin physical ideal (i.e., Mexican)). Spanish participants represented the ethnic majority group in Spain.

The primary research questions were: Is the *relationship* between awareness and internalization and between internalization and body dissatisfaction the same across Euro-American, Mexican American, and Spanish groups? If not, how does each relationship differ? As shown in Figure 3, I hypothesized that the relationship between awareness and internalization and between internalization and body dissatisfaction would be stronger for Euro-American women than for Mexican American women, with no specific predictions regarding the Spanish group.

If ethnicity moderated the relationships between awareness and internalization and between internalization and body dissatisfaction, as was predicted, a secondary goal of the study was to examine the influence of acculturation to dominant Euro-American culture on those relationships within the Mexican American group. I predicted that the relationships between awareness and internalization and between internalization and body dissatisfaction participants would be stronger in participants with higher levels of acculturation to Euro-American culture.

## METHOD

### *Participants*

Mexican American ( $n = 103$ ), Euro-American ( $n = 101$ ), and Spanish ( $n = 115$ ) female students attending large universities in the Southwestern United States and Spain participated in the study. In this paper, the term “Mexican American” refers to persons of Mexican descent who are living in the United States (i.e., either because they are American citizens or because they are Mexican citizens living abroad). Euro-American participants were recruited from undergraduate psychology courses while Mexican American participants from both undergraduate psychology courses and various student organizations comprised of Hispanics/Mexican Americans (e.g., the Mexican Student Association, the Hispanic Student Association, and various multicultural sororities) participated. Participants recruited from psychology classes received research credit in exchange for participation whereas participants recruited from student organizations participated on a volunteer basis. Spanish participants were recruited from undergraduate psychology classes and participated on a volunteer basis.

To maintain 100 participants per group (as was proposed), participants were eliminated based on missing data. After removing 19 participants, a mean substitution filled missing data points.

### *Measures*

Euro-American and Mexican American participants completed all measures in English whereas Spanish participants completed them in Spanish. Whenever available, previously translated Spanish versions of a measure were used; if a translated measure

did not exist, the English version was translated into Spanish and confirmatory and/or exploratory factor analysis evaluated its psychometric properties (see Warren, Gleaves, Cepeda Benito, & Fernandez, 2002). All Spanish translations were deemed appropriate for use. The order of the measures was counterbalanced to protect against order effects. After completion of measures, participants received a debriefing sheet that provided information about the study and local resources for assistance with eating disorders.

*Sociocultural Attitudes Towards Appearance Questionnaire-Revised* (SATAQ-R: Cusumano & Thompson, 1997). The SATAQ-R is a 21-item questionnaire designed to measure recognition and acceptance of culturally and socially endorsed appearance standards. It is based on the original Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ: Heinberg, Thompson, & Stormer, 1995). Items are scored on a 5-point Likert-type scale ranging from “completely disagree” to “completely agree. The SATAQ-R has two reported factors: An 11-item awareness subscale (AWARE), which indicates the extent to which an individual acknowledges a cultural emphasis on appearance and thinness, and a 10-item internalization subscale (INTERN), which indicates the extent to which an individual accepts these standards (Heinberg et al.). In an English-speaking sample, internal consistency was reported to be .83 on the awareness subscale and .89 on the internalization subscale (Thompson et al., 1999). In the current Euro-American sample, Cronbach’s alpha was .90 in the 21-item SATAQ-R, .85 in the AWARE subscale, and .85 in the INTERN subscale. In the Mexican American sample, Cronbach’s alpha was .86 in the 21-item SATAQ-R, .81 in the AWARE subscale, and .83 in the INTERN subscale.

A Spanish version of the SATAQ-R was not available. Consequently, it was translated, examined psychometrically, and cross-validated with the English version (Warren et al., 2002). In a Spanish sample, internal consistency was .85 on the awareness subscale and .89 on the internalization subscale (Warren et al., 2002). In the current sample, Cronbach's alpha was .87 in the 21-item SATAQ-R, .83 in the AWARE subscale, and .89 in the INTERN subscale.

*Body Shape Questionnaire* (BSQ: Cooper, Taylor, Cooper & Fairburn, 1987). The BSQ is a 34-item measure that assesses body shape and weight concerns (Cooper et al., 1987). Items are scored on a 6-point Likert scale ranging from "never" to "always". A total score is obtained by summing all items: the higher the score, the more body dissatisfaction. Rosen, Jones, Ramirez, and Waxman (1996) reported three week test-retest reliability was .88. In the current data, Cronbach's alpha was .97 in both the Western and the Mexican American groups.

The BSQ was previously translated into Spanish (Raich et al., 1996). Internal consistency was .97 in a non-clinical college sample (Warren et al., 2002). In the current sample Cronbach's alpha was .97.

*Body Image Assessment* (BIA: Williamson, Davis, Bennett, Goreczny, & Gleaves, 1989). The BIA assesses body image using 9 silhouettes ranging from very thin to very large. The participant identifies the body figure that best approximates her current body size (CURRENT) and her ideal body size (IDEAL). The discrepancy between her current and ideal size indicates the degree of body dissatisfaction (DISC). Williams et al. (2001) reported test-retest reliability to be .90 for the current body size

and .71 for the ideal body size. When used in a group administration format the BIA had comparable reliability and validity (Williams, Gleaves, Cepeda-Benito, Erath, & Cororve, 2001). The Spanish version of the BIA described in Gleaves et al. 2000 was used in the current study.

*Demographic Information.* A demographic questionnaire asked questions regarding ones self-identified gender, age, weight, height, and ethnicity. From these data Body Mass Index ( $BMI = \text{weight (kg)}/\text{height (m}^2\text{)}$ ) indicated the degree of adiposity for each participant.

*Acculturation Rating Scale for Mexican Americans-Revised (ARSMA-II:* Cuéllar, Arnold, & Maldonado, 1995). In addition to previously mentioned measures, Mexican American participants (only) received the revised ARSMA-II, which is a 48-item measure of Mexican American acculturation. It is based on the original Acculturation Rating Scale for Mexican Americans (ARSMA: Cuéllar, Harris, & Jasso, 1980). Items are scored on a 5-point Likert scale ranging from “not at all” to “extremely often or almost always”. Two subscales from the measure were examined: The Anglo Orientation Scale (AOS), which indicates one’s degree of identification with Anglo culture, and the Mexican Orientation Scale (MOS), which indicates one’s degree of identification with Mexican culture. Subtracting the degree of Mexican cultural orientation (i.e., MOS mean) from the degree of Anglo cultural orientation (i.e., AOS mean) yields an overall acculturation score (ACCULT). The ACCULT score represents an individual’s score along a continuum from “very Mexican” to “very Anglo”. Cronbach’s alphas were .83 in the AOS subscale and .88 in the MOS subscale, with 1-

week test-retest reliabilities ranging from .94-.96 (Cuéllar et al., 1995). In the current sample alpha was .67 in the AOS subscale and .91 on the MOS subscale.

Mexican American participants also identified their generational status. Participants born in another country but currently living in the USA were first generation; participants born in the USA with either parent born in another country were second generation; participants with both parents born in USA and all grandparents born in another country were third generation; participants with both parents born in the USA and at least one grandparent born in another country were fourth generation; and, participants with parents and all grandparents born in the USA were considered fifth (or greater) generation. In the current sample, 9% of Mexican Americans were first generation, 50% were second generation, 13% were third generation, 20% were fourth generation, and 7% were fifth generation.



## RESULTS

Analyses were conducted using Statistics Package for the Social Sciences software (SPSS for Windows Version 11.0, 2001) and LISREL 8.5 (Jöreskog & Sörbom, 2001).

### *Descriptive Information by Group*

Differences across ethnic groups on age, BMI, awareness, internalization, current and ideal body shape, current-ideal discrepancy, and body dissatisfaction were examined by conducting several univariate analyses of variance (ANOVA). Univariate ANOVA's specified age, BMI, AWARE, INTERN, CURRENT, IDEAL, DISC, and BSQ as dependent variables and ethnic group as the independent variable. As shown in Table 1, significant main effects existed on age, BMI, awareness, internalization, ideal body size, and body dissatisfaction.

Examination of post hoc analyses using Tukey's honestly significant difference tests (Tukey *a*) determined the nature of group differences. With respect to age and BMI, Tukey *a* tests indicated that the Mexican American group was significantly older than the Euro-American and Spanish groups (with no significant difference between the Euro-American and Spanish groups). Additionally, the Mexican American group had a significantly higher BMI than the Euro-American, which subsequently had a significantly higher BMI than the Spanish group. With respect to awareness and internalization, the Mexican American group was less aware of a thin ideal than the Spanish and Euro-American groups (which did not differ significantly) and the Euro-American group had significantly higher internalization than the Mexican American

group, which in turn had significantly higher internalization than the Spanish group. In regards to ideal body size, the Mexican American group had a larger physical ideal than the Spanish or Euro-American groups (which did not differ significantly) and the Euro-American group had more overall body dissatisfaction than the Spanish and Mexican American groups (which did not differ significantly).

### *Moderator Effects*

Analysis of covariance (ANCOVA) with tests of homogeneity of slope examined the prediction that the relationship between awareness and internalization and the relationship between internalization and body dissatisfaction differed as a function of ethnic group (moderator effects). The first ANCOVA specified internalization as the dependent variable, and awareness, ethnic group, and their interaction as predictor variables (IV's). Neither age nor BMI significantly predicted internalization,  $F(1, 296) = 1.56, p = .23$  and  $F(1, 296) = 1.86, p = .17$  (respectively) and were consequently not entered into the analysis as covariates. As shown in Table 2, results indicated a significant interaction between awareness and ethnic group in predicting internalization.

An examination of standardized and unstandardized regression coefficients within each group ( $\beta$  and  $B$  weights, respectively) clarified the nature of group differences (see Table 3). The relationship between awareness and internalization was positive for all groups (i.e., as awareness increased, internalization increased). As depicted in Table 3, 95% confidence intervals around  $\beta$  and  $B$  indicated that the relationship between awareness and internalization was significantly stronger (i.e.,

steeper slope) in the Euro-American group than in the Mexican American or Spanish groups, which did not differ significantly.

To test whether the relationship between internalization and body dissatisfaction differed by group, a second ANCOVA specified body dissatisfaction as the dependent variable, and internalization, ethnic group, and their interaction as predictor variables. One assumption of ANCOVA is that the covariate predicts the DV but does not interact significantly with the predictor variable. BMI significantly predicted body dissatisfaction,  $F(1, 296) = 52.43, p < .01$ , but did not interact significantly with ethnic group,  $F(2, 294) = .43, p = .65$ , and was therefore included in this analysis as a covariate. Age did not predict body dissatisfaction and was therefore not included as a covariate. As shown in Table 2, results indicated a significant interaction between internalization and ethnic group in predicting body dissatisfaction. Examination of 95% confidence intervals around the regression coefficients ( $\beta$  and B weights), as presented in Table 3, indicated that the positive relationship between internalization and body dissatisfaction was significantly stronger in the Euro-American group than in the Mexican American group, with no significant differences between the Spanish and Mexican American groups.

#### *Path Analysis*

To test both relationships in the model simultaneously (i. e., the relationship between awareness and internalization and the relationship between internalization and body dissatisfaction) and to control for multivariate non-normal data, I conducted a path analysis (Curran, West, & Finch, 1996). Path analysis uses multiple regression equations

to establish a pattern of relationships among variables to evaluate how well the obtained data fit the hypothesized path model. Estimates of the magnitude of the hypothesized effects (under the assumption that the model is correct) tested whether the observed data were consistent with the sociocultural model. If the path model is consistent with the observed data, one can conclude that the sociocultural model is plausible whereas if the data do not fit the model, it is unlikely that the proposed model is accurate (Klem, 1999).

Path analysis using maximum likelihood with robust standard errors estimated the model to account for the fact that the data were not multivariate normal (Morbias test for multivariate normality = 393.04,  $p < .01$  in Spanish data, 19.05,  $p < .01$  in Mexican data, and 684.57,  $p < .01$  in Euro-American data). The first model tested specified BMI and awareness as exogenous variables (i.e., predictor variables; variables the model did not explain but that were hypothesized to influence other variables in the model) and internalization and body dissatisfaction as endogenous variables (i.e., variables explained by one or more of the other variables in the model). In the moderational analyses, age did not predict body dissatisfaction or internalization and BMI significantly predicted body dissatisfaction but did not predict internalization. Consequently, the model was trimmed by setting the path between BMI and internalization to zero. This model served as the baseline model (Model 1).

The fit of the data to the path model was assessed, in part, by examining a chi-square value. The most commonly used chi-square is the normal theory chi-square statistic (Finch & West). However, as a measure of model fit under conditions of multivariate non-normality, the normal theory chi-square leads to an inflated Type 1

error rate (Curran, et al., 1996). One way to address this issue is to use chi-square statistics that correct for multivariate non-normality such as the chi-square corrected for non-normality or asymptotic distribution free chi-square (CSC: Browne, 1984) and the Satorra-Bentler scaled chi-square statistic (SB: Satorra & Bentler, 1988, equation 4.1). In Monte Carlo simulation studies, the CSC is theoretically asymptotically robust to multivariate non-normality but its behavior at smaller sample sizes can be poor whereas the SB, although more accurate, tends to over-reject models at smaller sample sizes (Curran et al., 1996). Due to the potential disadvantages of each chi-square statistic, I examined the results from both the CCS and the SB.

Additional fit indices included the Normed Fit Index (NFI: Bentler & Bonett, 1980), the Goodness of Fit Index (GFI: Jöreskog & Sörbom, 1993), the Comparative Fit Index (CFI: Bentler, 1990), the Non-Normed Fit or Tucker-Lewis Index (NNFI: Marsh, Balla, & McDonald, 1988), and the Root Mean Square Error of Approximation (RMSEA: Browne & Cudeck, 1993). Values of the GFI, NFI, CFI, and NNFI, values range from zero to 1.0 with values close to 1.0 indicating the best fit. Values of the RMSEA range from zero to 1.0, with a value close to .05 indicating a close fit, less than .08 signaling an adequate fit, and .10 or greater signifying a poor fit in the model (Finch & West, 1997).

To test for factorial invariance across ethnic groups, I conducted four “stacked” multi-group measurement models, first allowing the parameters of interest to be estimated separately in each ethnic group, then sequentially constraining them to be invariant across groups, and finally testing for changes in model fit (assessed by testing

changes in  $\chi^2$  values) (described by Bollen, 1989, Jöreskog & Sörbom, 1993). If the constrained model's fit was significantly worse than the unconstrained model's fit (i.e., the chi-square change score was significant), the paths differed significantly across groups. Model 1, which allowed the main paths of interest to vary across groups (i.e., the path between awareness and internalization and between internalization and body dissatisfaction), was the baseline path model. Model 2 was the same as Model 1 except it constrained the path between awareness and internalization across groups. Model 3 was the same as Model 1 except that it constrained the path between internalization and body dissatisfaction to be the same across groups. Model 4 constrained both the path between awareness and internalization and between internalization and body dissatisfaction concurrently.

Fit in Model 1 was very good: The model fit the data almost perfectly. As can be seen in the chi-square change scores in Table 4, when the path between awareness and internalization was constrained (Model 2) and compared to the unconstrained model (Model 1), there was a significant loss in model fit. This finding suggests that the path between awareness and internalization differs significantly across ethnic groups. Comparing Model 1 to Model 3, which tested the path between internalization and body dissatisfaction, resulted in a significant loss in fit for the CSC and a moderately significant loss in fit for the SB. Chi-square change scores comparing Model 4, which constrained the paths between awareness and internalization and between internalization and body dissatisfaction concurrently, to Model 1 also indicated a significant loss in fit.

Given there was a significant loss in fit when comparing constrained models to the unconstrained baseline model, path coefficients in the unconstrained model were examined to determine the nature of group differences. As displayed in Table 5, confidence intervals and path coefficients compared across groups indicated that the relationship between internalization and awareness was significantly stronger for the Euro-American group than for the Mexican American and Spanish groups (which did not differ significantly). Similarly, the relationship between internalization and body dissatisfaction was stronger for the Euro-American group than for the Mexican American and Spanish groups (which did not differ significantly). Figure 4 displays these relationships pictorially and presents standardized path coefficients across groups for the main relationships of interest.

#### *Acculturation*

To test the effect of acculturation on the relationship between awareness and internalization in the Mexican American group, a moderator regression specified internalization as the dependent variable and awareness, acculturation, and their interaction as predictor variables. This analysis indicated a significant main effect for awareness,  $F(1, 96) = 25.09, p < .01$ , acculturation,  $F(1, 96) = 4.92, p = .03$ , and a significant interaction  $F(1, 96) = 4.14, p < .05$ . A second moderator regression specifying body dissatisfaction as the dependent variable and internalization, acculturation, and their interaction as predictor variables tested the effect of acculturation on the relationship between internalization and body dissatisfaction in the Mexican American group. Results indicated a significant main effect for internalization,

$F(1, 96) = 17.75, p < .01$ , no effect for acculturation,  $F(1, 96) = .41, p = .58$ , and a significant interaction,  $F(1, 96) = 1324.81, p < .01$ .

To follow up the significant interactions and understand the nature of group differences, the Mexican American group was divided into three equal-sized subgroups by level of acculturation (labeled Low, Medium, and High). Examination of the regression coefficients,  $\beta$  and B weights, and their 95% confidence intervals by acculturation group suggested that the relationship between awareness on internalization was weaker/smaller in more highly acculturated individuals than in individuals of low or middle acculturation (See Table 6). The relationship between internalization and body dissatisfaction was significantly stronger/larger in the middle acculturated group than in the least and most acculturated groups.

To further understand that nature of the interactions, univariate ANOVA's compared mean levels of awareness, internalization, and body dissatisfaction by acculturation groups (See Table 7). Mean comparisons indicated that although levels of awareness were similar across acculturation groups, internalization was lowest in the Low group and highest in the High group. Furthermore, the standard deviations across groups on awareness were similar, but the variability on internalization reduced from Low to High groups. Mean comparisons also indicated that the Medium group had higher levels of body dissatisfaction than the Low or High groups.



## CONCLUSION AND DISCUSSION

In past decades cultural variables have shifted from being ignored, to being treated as nuisance variables, to being incorporated as a central contextual variable to help explain human behavior (APA, 2003). As recently stated in the *Guidelines on Multicultural Education, Training, Research, Practice, and Organizational Change for Psychologists*, “All individuals exist in social, political, historical, and economic contexts, and psychologists are increasingly called upon to understand the influence of these contexts on individuals’ behavior” (APA, p. 377). Given that eating disorders seem to be more prevalent in industrialized societies that value and idealize a thin physique (Wildes, et al., 2001), the impetus to understand the influence of culture on individual development is all the more important in eating disorder research.

The current study evaluated the sociocultural model of eating disorders and explored the potential for ethnicity to protect against internalization of a thin-physical ideal and body dissatisfaction. Two types of statistical analyses were used: ANCOVA and path analysis. Results supported the sociocultural model: The relationships between awareness and internalization and between internalization and body dissatisfaction were positive, regression coefficients were substantially large, and path analysis (in particular) provided evidence for the mediational effect of internalization on the relationship between awareness and body dissatisfaction. Results also supported ethnicity as a moderator between these two relationships: As predicted, both relationships were significantly stronger for Euro-American women than for Mexican American or Spanish women. Future research should examine how other aspects of the sociocultural model,

including the influence of family, peers, and the media on awareness and internalization of a thin ideal, interact with ethnicity.

The ability for ethnicity to serve as a protective factor against internalization and body dissatisfaction has important implications for Western culture as a whole and for the prevention of eating disorders. As stated previously, culture is fluid and dynamic: It is constantly informed by historical, ecological, political, and economic forces (APA, 2003). The ultimate goal is for Western culture itself to evolve in ways that reduce the development of eating disorder symptomatology. One way to identify aspects of Western culture that should be transformed is to examine and understand how ethnic groups with non-Western cultures of origin are protected against the development of eating disorder symptomatology and utilize such information to inform our own cultural growth.

The results of this study suggest that in order for Western culture to prevent eating disorders it should transform in at least two ways. First, it is clear that the Western physical female ideal is unattainable for most women and that, when internalized, can lead to body dissatisfaction. Prevention of eating disorders should involve strongly denouncing the ultra-thin ideal propagated in mainstream Western culture while, at the same time, implementing a more healthy, realistic female physical ideal. Existing prevention programs have denigrated the thin ideal through the teaching of media-literacy and human biology (e.g., set point theory) with some success (for a review see Mussell, Binford, Fulkerson, 2000). Through sociocultural agents such as language, the media, interpersonal relationships, social structures, and values, Western culture needs to

reject thinness as an “ideal” and adopt a more “non-Western” physical ideal. Second, Western culture needs to deemphasize appearance as a determinant of female value. A focus on indicators of worth, other than appearance, that are attainable and maintainable (e.g., intelligence, interpersonal relationships, spiritual connection, etc) will enforce the notion that one’s value as a female is not contingent upon her appearance.

Level of acculturation moderated the relationships between awareness and internalization and between internalization and body dissatisfaction in the Mexican American group: significant interactions existed. Follow-up analyses suggested that the relationship between awareness and internalization was weakest in the highly acculturated group. Mean comparisons indicated that although levels of awareness were similar across acculturation groups, internalization was lowest in the least American acculturated group and highest in the most American acculturated group. The standard deviations across groups on awareness were similar, but the variability on internalization reduced from least American acculturated to the most American acculturated groups. The restriction of range on internalization in the most acculturated group (compared to the lowest or middle groups) explained, in part, the smaller/weaker relationship between awareness and internalization in that group: when there is less variance to explain there will be a smaller/weaker relationship. Further exploration of acculturation on these relationships is warranted.

Additionally, the relationship between internalization and body dissatisfaction was strongest in the middle acculturated group. One explanation of the finding that the middle American acculturated group had a stronger relationship between internalization

and body dissatisfaction is that unlike ethnic minorities of low or high acculturation, individuals with middle acculturation identify (fairly strongly) with both the dominant culture and their culture of origin. They are essentially bicultural. Being in a state of middle acculturation may create special demands on ethnic minorities as they figure out how to be a part of two different cultures (Miller et al., 2000; Smolak & Striegel-Moore, 2001). The discrepancy between dominant American/ Western culture and the Mexican non-Western culture of origin may lead to greater vulnerability for body dissatisfaction because, theoretically, one who is moderately acculturated has a desire to fit into and be accepted by two cultures. If those cultures present conflicting messages about what is important, appropriate, and desirable (especially with regard to appearance), it could put one at risk for body dissatisfaction.

A second explanation for the current findings is that individuals of middle acculturation may experience more acculturative stress, which is the stress inherent in adapting to a new culture (Perez, Voelz, Pettit, & Joiner, 2002). The stress of adapting to Western culture while still maintaining attachment to the Mexican, non-Western culture of origin may predispose individuals of medium acculturation to internalization and body dissatisfaction more strongly than individuals of low or high acculturation. Furthermore, whether a variable serves as a risk or protective factor depends on the context in which it occurs (Crago, Shisslak, & Ruble, 2001). For example, Smolak, Murnen, and Ruble (2000) found female athletes in sports that emphasized thinness were at increased risk for eating problems whereas participants in non-elite sports had fewer eating problems. Consequently, sports participation can serve as either a protective or a

risk factor depending on the context. In this same regard, acculturation may be protective for Mexican Americans who are more or less Anglo acculturated but put one at greater risk for body dissatisfaction when one is of medium acculturation.

There are several limitations of this study that need to be considered. First, the data are cross-sectional, which does not allow a researcher to draw causal inferences: Only longitudinal research can actually demonstrate whether a factor, such as ethnicity, is protective. Future research should investigate the moderational effects of ethnicity and acculturation on the relationships between awareness, internalization, and body dissatisfaction over time. Second, the findings of the current study are primarily limited to university-aged students. Although eating disorder symptomatology concerns in college-aged women are epidemic (Low et al., 2003), the generalizability of these findings to other ages and to clinical samples is limited. Third, only 5 of the total 100 Mexican American participants could be characterized as extremely acculturated or extremely un-acculturated to Anglo culture. The lack of participants at extreme levels of acculturation limited the variability in the sample and may have restricted, to some degree, the ability to understand the influence of acculturation. Furthermore, ethnic categories are problematic: labels are not consistent indicators of group membership, can vary over time and situation, and gloss over within-group variability (Phinney, 1996). Although this study examined culture of origin (i.e., Mexican, Spanish, Euro-American) and minority status as indicators of ethnicity to get beyond simplistic ethnic categories, it is noted that ethnicity is inherently a very difficult construct to measure.

In conclusion, the prevalence of eating disorders appears to change across time as cultures change. As noted by Miller and Pumariega (2001), change in physical standards and values around appearance may happen on an individual level, such as when an individual from a non-Western culture migrates to a Western culture and subsequently acculturates, or at a macro level when the entire make-up of a culture changes. Just as non-Western culture can inform Western culture about ways to protect against eating disorder symptomatology, Western culture can put non-Western cultures at greater risk for developing eating disorders. Awareness of a thin Western ideal is becoming more accessible to non-Western cultures through mediums like the internet, television, movies, direct travel accessibility, and music. As this dissemination of information occurs, Western cultural values and attitudes spread to non-Western cultures, which often results in an adoption of some aspects of Western culture (Gleaves et al., 2000). In the future, it will be important not only for Western culture to be informed by protective forces that exist in non-Western cultures, but also to keep non-Western cultures from adopting the aspects of Western culture that will subsequently put their people at greater risk for the development of eating pathology.

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## APPENDIX

Table 1

*Descriptive Information for Three Samples*

	Euro-American	Mexican	Spanish	<i>F</i>	<i>p</i>
Age (years)	18.86 (3.05) <sub>a</sub>	19.79 (2.04) <sub>b</sub>	18.66 (2.20) <sub>a</sub>	5.96	<.01
BMI	22.25 (3.08) <sub>a</sub>	23.68 (3.88) <sub>b</sub>	21.16 (2.68) <sub>c</sub>	15.09	<.01
SATAQ-R					
AWARE	44.14 (5.85) <sub>a</sub>	40.53 (6.23) <sub>b</sub>	42.91 (6.38) <sub>a</sub>	8.86	<.01
INTERN	37.47 (7.22) <sub>a</sub>	33.90 (7.03) <sub>b</sub>	31.26 (8.04) <sub>c</sub>	17.50	<.01
BSQ	106.18 (37.67) <sub>a</sub>	91.30 (33.76) <sub>b</sub>	84.07 (30.85) <sub>b</sub>	10.87	<.01
BIA					
CURRENT	4.89 (1.86)	5.04 (1.90)	4.69 (1.77)	1.49	.23
IDEAL	3.61 (1.10) <sub>a</sub>	4.05 (1.05) <sub>b</sub>	3.49 (1.17) <sub>a</sub>	6.61	<.01
DISC	1.28 (1.62)	1.11 (1.58)	1.20 (1.76)	.29	.75
ARSMA-II					
AOS		4.15 (.38)			
MOS		3.48 (.79)			
ACCULT		.67 (1.02)			

*Note:* Means in the same row that do not share subscripts differ at  $p < .05$  in the Tukey *a* honestly significant difference comparison.

Table 2

*Analyses of Covariance Results Predicting Internalization and Body Dissatisfaction*

Source	<i>df</i>	<i>F</i>	partial $\eta^2$	<i>p</i>
<i>INTERN: Internalization</i>				
AWARE	1	70.32*	.19	<.01
Group	2	2.66*	.02	.04
Group * AWARE	2	4.72*	.03	<.01
Error	294			
<i>BSQ: Body Dissatisfaction</i>				
BMI	1	77.57*	.21	<.01
INTERN	1	209.96*	.42	<.01
Group	2	2.88	.02	.06
Group * INTERN	2	3.99*	.03	.02
Error	293			

*Note:* Data were analyzed using Type III Sum of Squares;  $\eta$  = partial Eta squared.

\*  $p < .05$ .

Table 3

*Regression Weights and (95% confidence intervals) as a Function of Ethnic Grouping*

	Euro-American	Mexican	Spanish
<i>Awareness→Internalization</i>			
<i>B</i>	.79	.47	.32
C. I. <i>B</i>	.60-.98	.27-.68	.07-.57
$\beta$	.64	.38	.26
C. I. $\beta$	.48-.79	.21-.55	.06-.46
<i>Internalization→Body dissatisfaction</i>			
<i>B</i>	3.47	2.25	2.50
C. I. <i>B</i>	2.74-4.21	1.54-2.96	1.98-3.01
$\beta$	.77	.50	.55
C. I. $\beta$	.61-.93	.34-.66	.44-.67

Note: C. I. = 95% Confidence Interval

$\beta$  weights were calculated by standardizing the entire sample (z scores) and running analyses within each group

Table 4

*Path Analysis Results*

Model	$\chi^2_1$	$\chi^2_2$	df	NFI	CFI	NNFI	RMSEA	$\Delta df$	$\Delta \chi^2_1$	p1	$\Delta \chi^2_2$	p2
1	7.17	5.56	12	.97	1.00	1.02	<.01					
2	15.75	11.41	14	.94	.98	.98	<.01					
			Compare Model 1 to 2					2	8.58**	.01	5.85**	.05
3	16.58	10.24	14	.95	1.00	1.00	<.01					
			Compare Model 1 to 3					2	9.41**	<.01	4.68*	.10
4	23.97	17.47	16	.92	.97	.96	<.01					
			Compare Model 1 to 4					4	16.80**	<.01	11.91**	.02
			Compare Model 2 to 4					2	8.22**	.02	6.06**	.05
			Compare Model 3 to 4					2	7.39**	.02	7.23**	.03

Note: \*\*  $p < .05$ , \*  $p < .10$ .

$\chi^2_1$  is the Chi-Square Corrected for Non-Normality;  $\chi^2_2$  is the Satorra-Bentler Scaled Chi-Square; NFI = Normed Fit Index; CFI = Comparative Fit Index; NNFI = Non-Normed Fit Index/Tucker-Lewis Index; RMSEA = Root Mean Square Error or Approximation. Model 1 = baseline; Model 2 = path invariant between awareness and internalization; Model 3 = path invariant between internalization and body dissatisfaction; Model 4 = paths between awareness and internalization and between internalization and body dissatisfaction invariant.

Table 5

*Unconstrained Path Model (Model 1): Regression Weights and 95% Confidence*

*Intervals as a Function of Ethnic Group*

	Euro-American	Mexican	Spanish
<i>Awareness→Internalization</i>			
Coefficient	0.79 <sub>a</sub>	0.47 <sub>b</sub>	0.32 <sub>b</sub>
C. I.	.63-.95	.25-.69	.04-.6
<i>Internalization→Body Diss</i>			
Coefficient	3.47 <sub>a</sub>	2.25 <sub>b</sub>	2.50 <sub>b</sub>
C. I.	2.67-4.27	1.43-3.07	1.9-3.1

*Note:* Values in same row that do not share the same subscript differ at  $p < .05$ .

C. I. = 95% Confidence Interval.

Table 6

*Regression Weights and 95% Confidence Intervals as a Function of Acculturation*

<i>Group</i>	Acculturation		
	Low	Medium	High
<i>Awareness→Internalization</i>			
<i>B</i>	.58	.52	.28
<i>C. I. B</i>	.20-.96	.13-.90	-.04-.60
$\beta$	.49	.43	.30
<i>C. I. <math>\beta</math></i>	.17-.81	.11-.75	-.04-.64
<i>Internalization→Body Dissatisfaction</i>			
<i>B</i>	1.90	3.53	1.82
<i>C.I.</i>	.40-3.40	2.24-4.82	.06-3.58
$\beta$	.42	.70	.35
<i>C.I.</i>	.10-.74	.44-.96	.01-.69

C. I. = 95% Confidence Interval.



Table 7

*Awareness, Internalization and Body Dissatisfaction Scores by Level of Acculturation*

	Acculturation			<i>F</i>	<i>p</i>
	Low	Medium	High		
<i>n</i>	33	34	33		
<i>Awareness</i>					
<i>M (SD)</i>	40.73 (6.77)	40.00 (6.09)	40.88 (5.95)	.19	.83
<i>Internalization</i>					
<i>M (SD)</i>	32.61 (8.02)	33.65 (7.24)	35.45 (5.50)	1.40	.25
<i>Body Dissatisfaction</i>					
<i>M (SD)</i>	91.09 (36.21)	96.44 (36.41)	86.21 (28.24)	.77	.47

Note: *df* (2, 97) for F values.

Levels of acculturation are based on ARSMA-II ACCULT scores: Low = low Anglo acculturation,

Medium = medium Anglo acculturation, High = high Anglo acculturation.

Figure 1

*Sociocultural Model*

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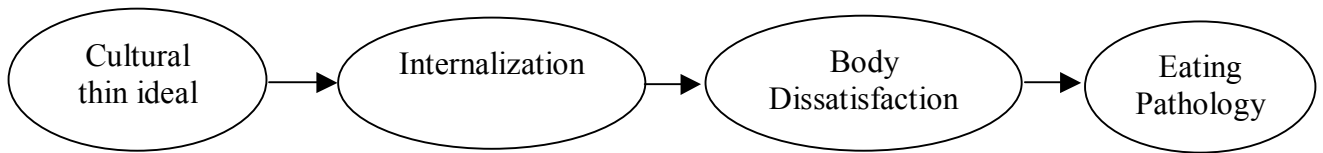


Figure 2:

*Effect of Moderating Variable on Sociocultural Model*

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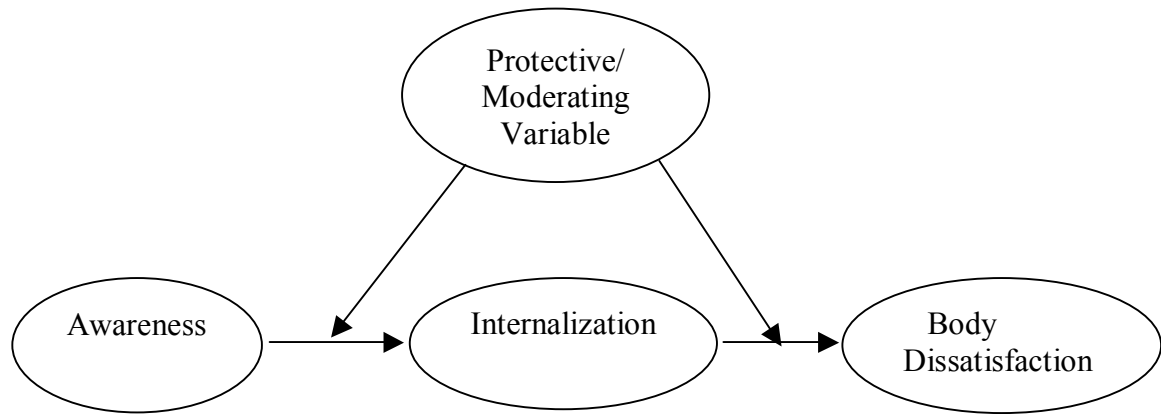


Figure 3:

*Hypothesized Effect of Ethnicity Moderating the Relationship Between Awareness and Internalization*

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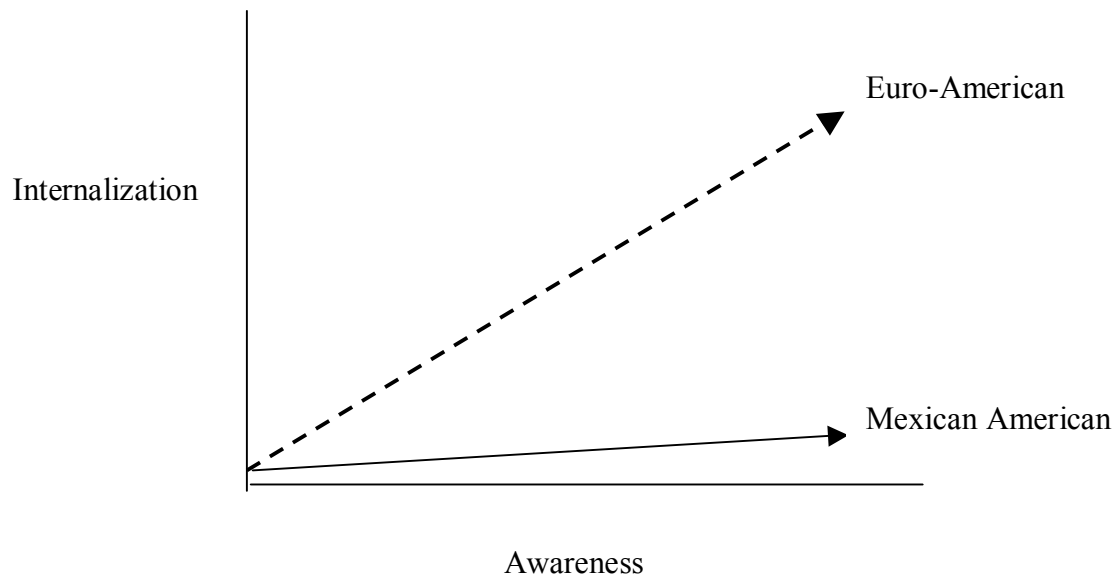
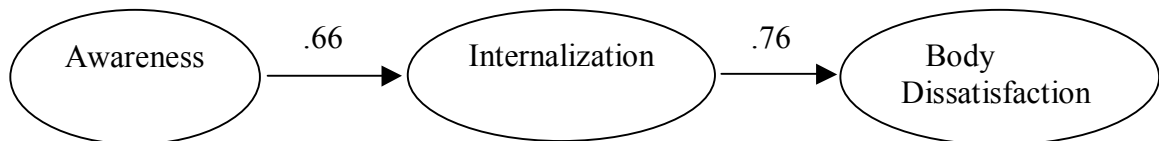


Figure 4:

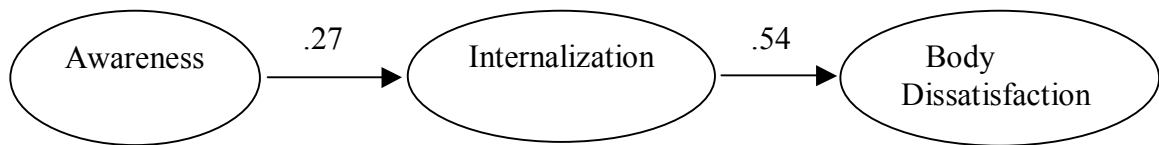
*Standardized Path Coefficients in Unconstrained Model (Model 1) by Group*

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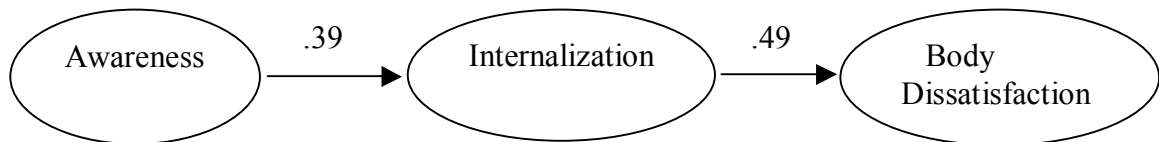
Euro-American



Spanish



Mexican American



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- Raymond, N. C., Neumeyer, B. E., Warren, C. S., Lee, S. S., & Peterson, C. B. (2003). Energy Intake Patterns in Binge Eating Disordered Subjects. *Obesity Research*, 11, 869-879.

Manuscripts Submitted:

- Warren, C. S., Strauss, J., Taska, J. L., & Sullivan, S. J. Inspiring or dispiriting? The effect of diet commercials on snack food consumption in high school and college aged women. Submitted for publication consideration, *In Review*.

Selected Presentations:

- Fingeret, M. C., Warren, C. S., Moynan, S., Gleaves, D. H. (November, 2003). *Eating disorder prevention research: A meta-analysis*. Poster accepted for presentation at the annual meeting of the Association for the Advancement of Behavior Therapy, Boston, MA.
- Warren, C. S., Cepeda-Benito, A., Rodriguez, M. S., Fernandez, M. C., Vila, J. & Gleaves, D. H. (November, 2002). *Cuanto te Gusta el Chocolate? Measurement of Cravings Across Culture, Food Types, and Gender*. Poster presented at the Association for Advancement of Behavior Therapy, Reno, NV.
- Warren, C. S., Gleaves, D. H., & Cepeda-Benito, A. (November, 2002). *Psychometric properties of Spanish versions of the Sociocultural Attitudes Towards Appearance Questionnaire, Goldfarb Fear of Fat Scale, & the Body Shape Questionnaire*. Poster presented at the Eating Disorder Research Society Meeting, Charleston, SC.
- Warren, C. S. & Raymond, N. C. (November, 2001). A Comparison of Food Consumption Patterns During a Binge Eating Episode in Individuals with Binge Eating Disorder and Bulimia Nervosa. Poster presented at the Eating Disorder Research Society Meeting, Santa Fe, NM.